

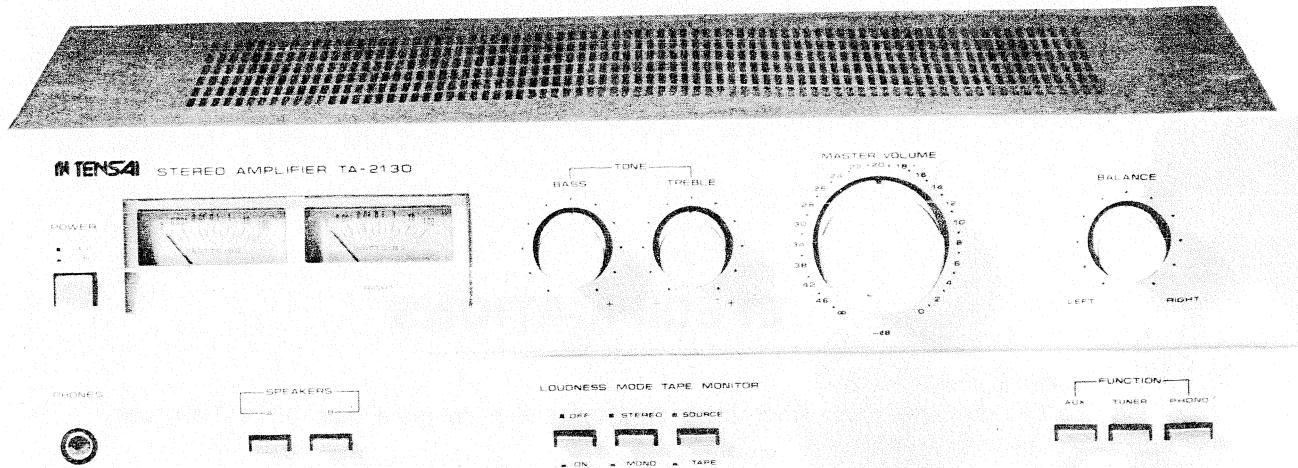
# **TA-2130**

30W PRE-MAIN AMPLIFIER



# **TENSAI**

INTERNATIONAL



# **Service Manual**

## CONTENTS

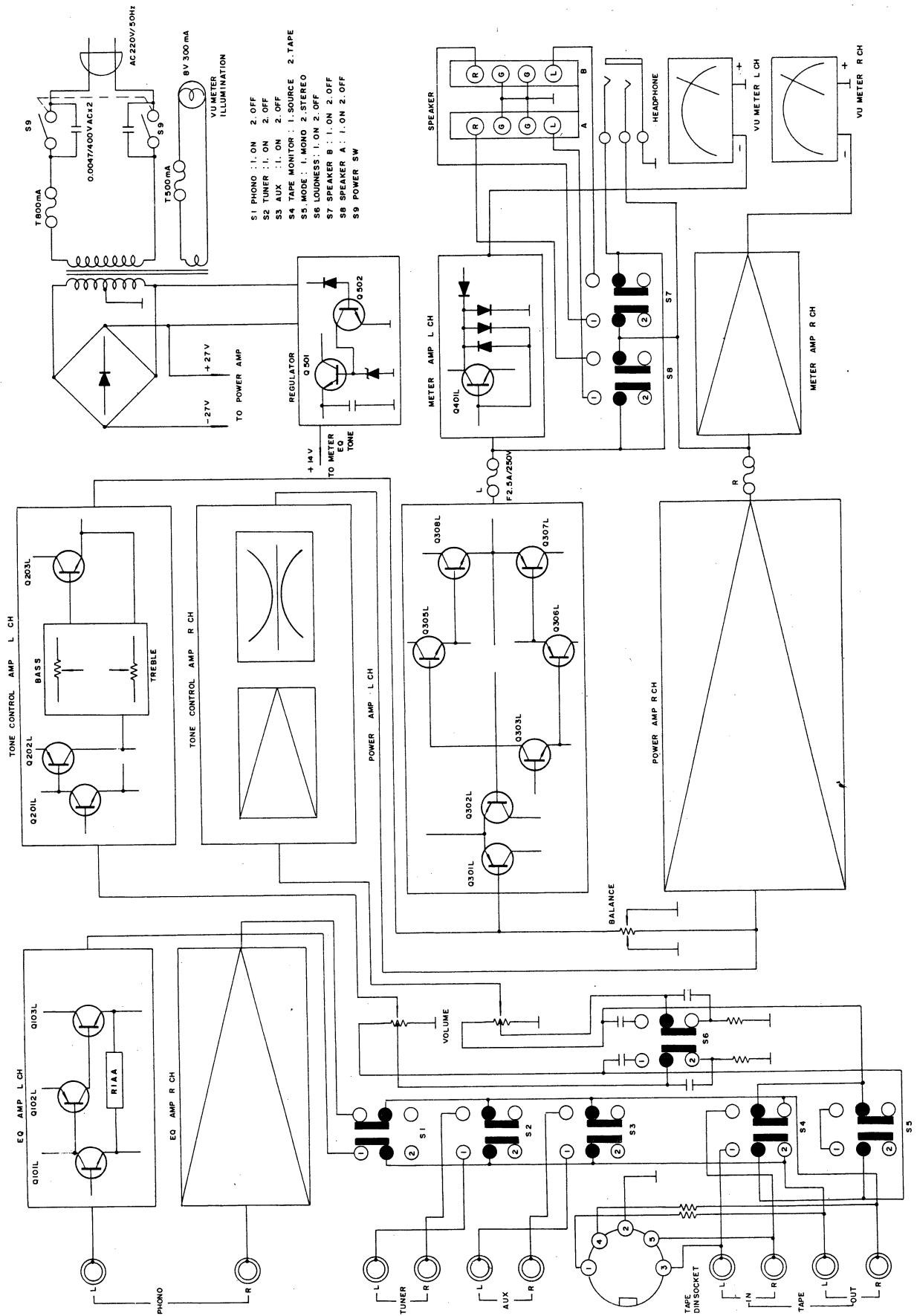
SPECIFICATIONS .....	2
FUNCTIONAL BLOCK DIAGRAM .....	3
ELECTRICAL ADJUSTMENT PROCEDURE .....	4
EXPLODED VIEW OF CABINET AND CHASSIS .....	5, 6
TOP VIEW OF P.C. BOARDS .....	7, 8
PARTS LIST .....	9, 10
POINT TO POINT WIRING DIAGRAM .....	11, 12
SCHEMATIC DIAGRAM.....	13, 14
NOTES .....	15

## SPECIFICATIONS

Rated Output Power	
$2 \times 18W$ , at 8 ohms from 20 to 20.000 Hz with no more than 0.1% THD, both channels driven.	
Total Harmonic Distortion	0.1% at rated power
Input Sensitivity/Impedance	
Phono:	2.5mV/47k ohms
Tuner:	150mV/47k ohms
Aux:	150mV/47k ohms
Tape:	150mV/47k ohms
Phono Maximum Input Level	120mV
Output Level/Impedance	
Tape:	150mV/47k ohms
Headphones:	8 ohms – 2 Kohms
Speakers:	A,B,A + B,OFF/8 ohms or more
Frequency Response	20-20.000 Hz + 1/-1 dB
Tone Control	
Bass:	± 10 dB/100 Hz
Treble:	± 10 dB/ 10 KHz
Loudness Control	+ 8 dB/100 Hz, + 7 dB/10 kHz
Signal-to-Noise Ratio	
Phono:	68dB
Tuner, Aux, Tape:	90dB
Power Consumption	180W at rated power output 15W at no signal
Dimension (WHD)	430×136×319 m/m
Weight	6.5kg

Our policy is one of continuous development of our products and we may change specifications without notice.

## BLOCK DIAGRAM



# ELECTRICAL ADJUSTMENT PROCEDURE

STEP	ALIGNMENT	CONNECTIONS	ADJUST	ADJ. FOR	REMARKS
1	BIAS CURRENT ADJ. L-CH	CONNECT DC MV METER BETWEEN EMITTERS OF POWER TRANSISTORS (Q307L&Q308L) AS SHOWN IN FIG1.	VR301L	DC16MV $\pm 2\text{MV}$	1. SET VOLUME CONTROL TO MINIMUM. 2. FOR ADJUSTMENT, WAIT 10 MINUTES AFTER THE POWER SWITCH IS TURNED ON. 3. THIS BIAS CURRENT ADJUSTMENT CONVERTS CURRENT VALUE INTO VOLTAGE BY OHM'S LAW ( $\approx 30\text{mA}$ ).
2	BIAS CURRENT ADJ. R-CH	CONNECT DC MV METER BETWEEN EMITTERS OF POWER TRANSISTORS (Q307R & Q308R) AS SHOWN IN FIG1.	VR301R		
3	VU METER OUTPUT LEVEL ADJ. L-CH	CONNECT 1KHZ INPUT TO AUX L CH AND INCREASE VOLUME UNTIL 10W OUTPUT INTO 8 OHMS LOAD IS MEASURED AS SHOWN IN FIG 2.	VR401L	10W SCALE OF VU METER	1. SET TONE AND BALANCE CONTROLS TO CENTER POSITION. 2. SET FUNCTION SELECTOR TO AUX POSITION.
4	VU METER CUTPUT LEVEL ADJ. R-CH	CONNECT 1KHZ INPUT TO AUX R CH AND INCREASE VOLUME UNTIL 10W OUTPUT INTO 8 OHMS LOAD IS MEASURED AS SHOWN IN FIG 2.	VR401R		

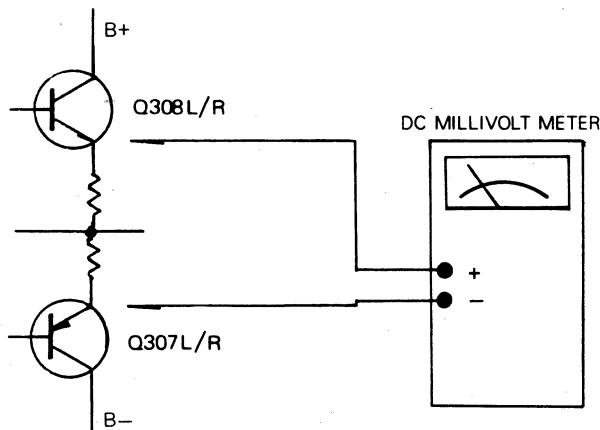


Fig. 1. Bias Current Adjustment

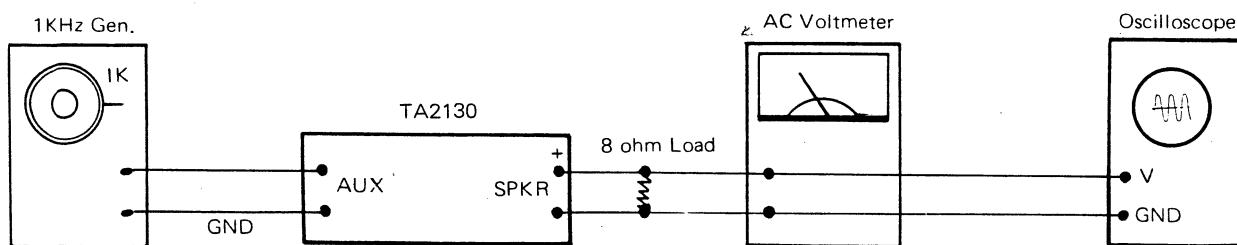
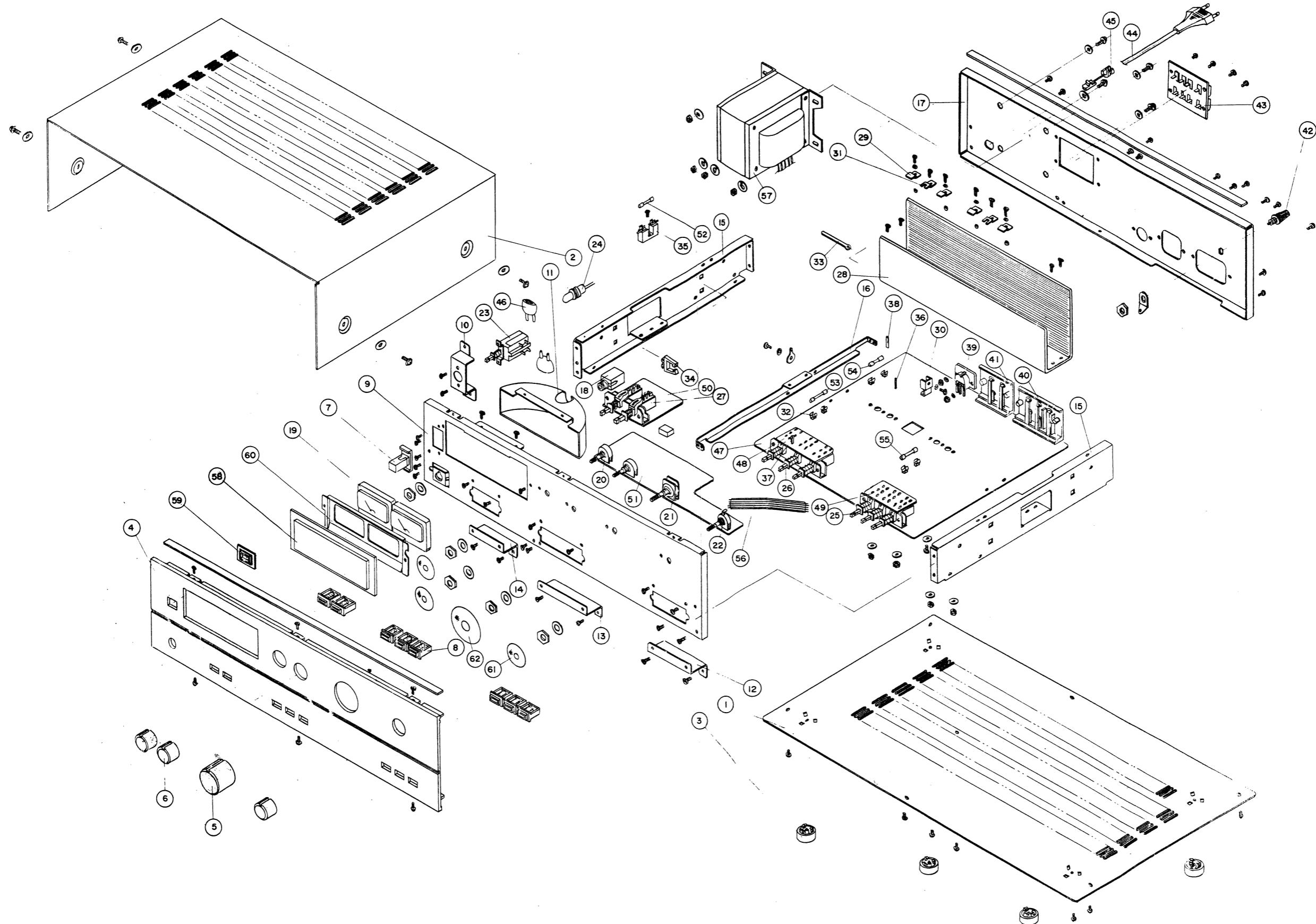
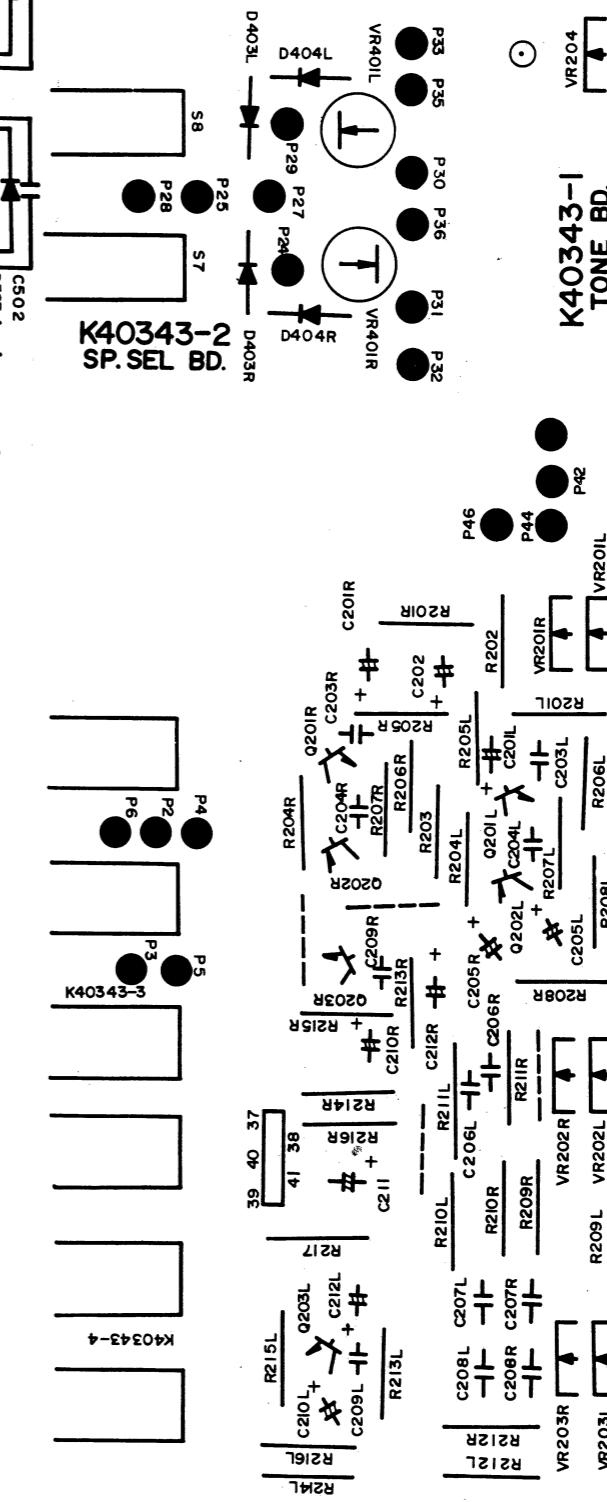
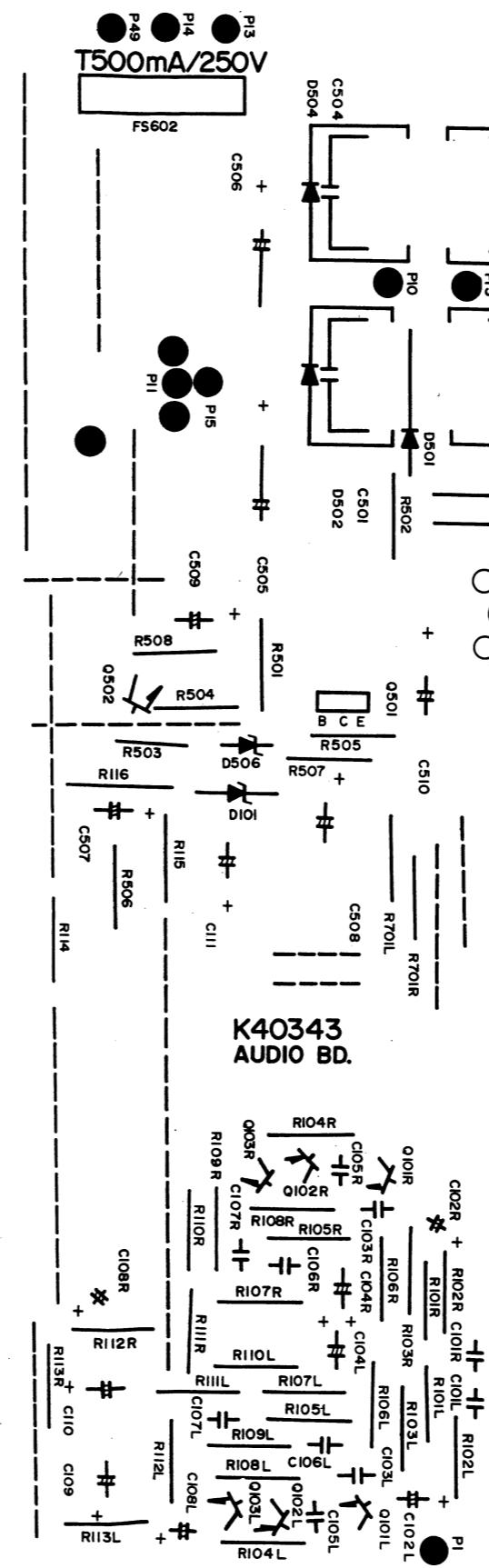
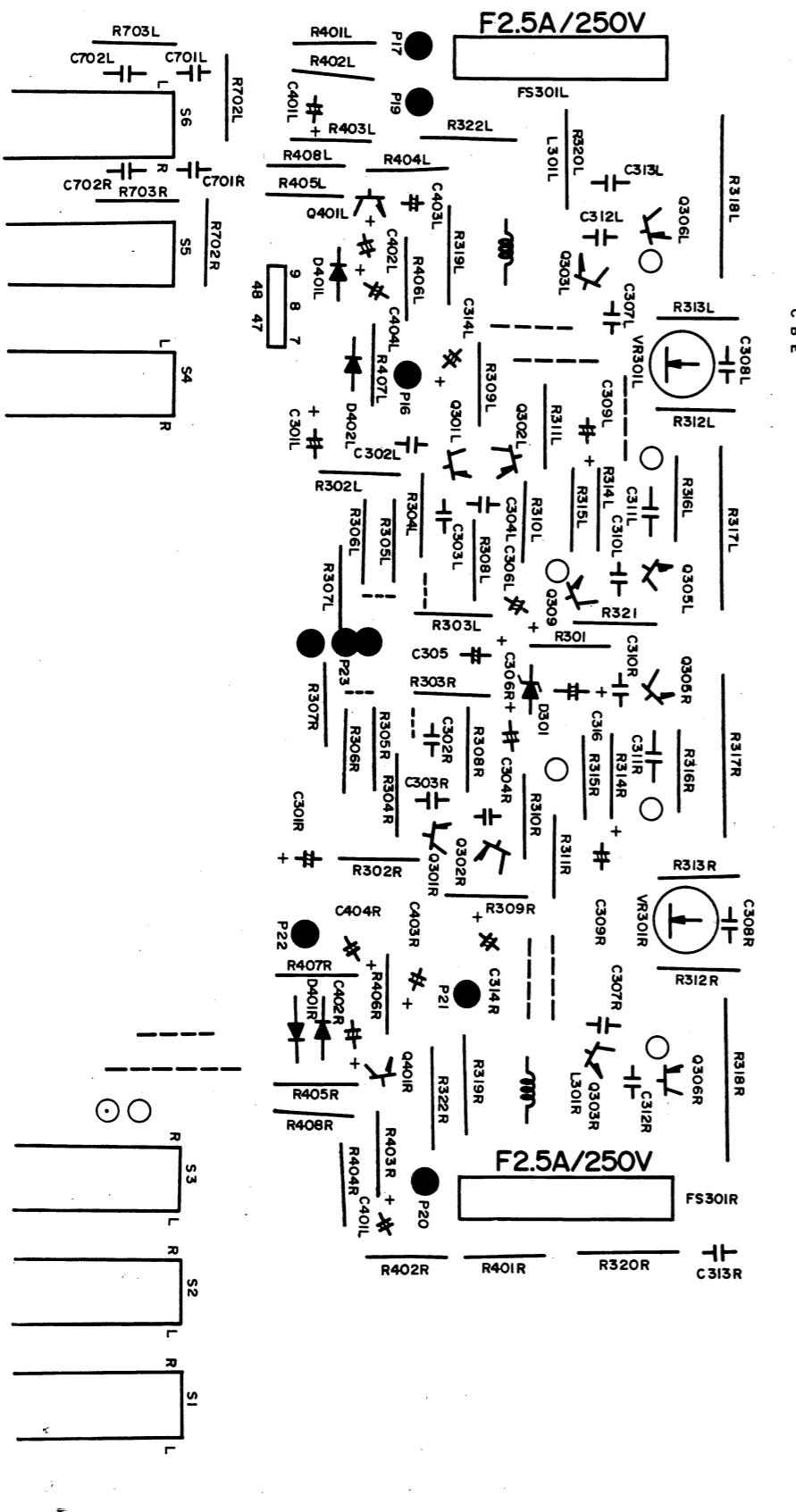


Fig. 2. VU Meter level adjustment

# EXPLODED VIEW OF CABINET AND CHASSIS



## **TOP VIEW OF P.C. BOARDS**



# PARTS LIST

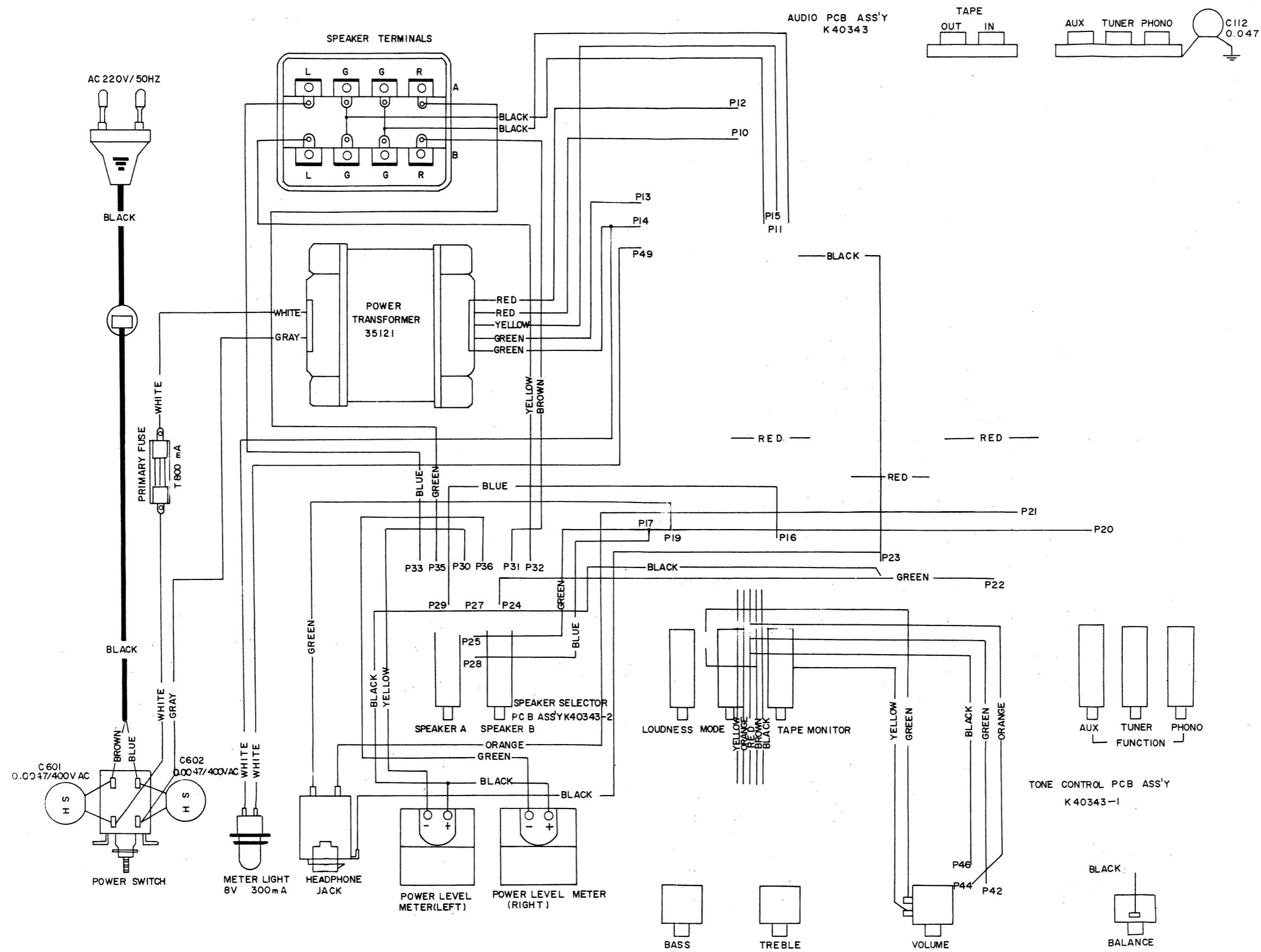
Ref. No.	Parts No.	Description	O'ty
<b>PACKING PARTS LIST</b>			
	PE-74172-02	Inner Box	1
	PE-74097A	Poly Bag	1
	PC-74171A	Cushion (Right & Left)	2
<b>ACCESSORY PARTS LIST</b>			
	96051-1	Operation Manual	1
	96000-10	Product-Certificate Card	1
<b>CABINET PARTS LIST</b>			
1	PC-62338A	Bottom Cover	1
2	PC-62243	Cabinet	1
3	AD-71045	Foot Ass'y	4
<b>APPEARANCE PARTS LIST</b>			
4	PC-61097	Front Panel Ass'y	1
5	PD-72246	Volume Knob	1
6	PE-72173	Control Knob	3
7	AE-72171	Push Knob Ass'y (Power)	1
8	AE-72170	Push Knob Ass'y (Function)	8
<b>CHASSIS PARTS LIST</b>			
9	PC-62339	Front Chassis	1
10	PE-68535	Power SW Bracket	1
11	PD-64063	Meter House	1
12	PE-68536	Selector SW Bracket	1
13	PE-68407	Push SW Bracket	1
14	PE-68537	Speaker SW Bracket	1
15	PD-62341	Main Frame	2
16	PD-62342	Center Frame	1
17	PC-62304A	Back Chassis	1
<b>ELECTRICAL PARTS LIST</b>			
18	PC-95035	Phone Jack	1
19	PD-75028	Meter VU (Power Level)	2
20	PE-15100	Potentio Meter (Tone) 100K ohm (B)	2
21	PE-15106	Potentio Meter (Volume) 100K ohm (B)	1
22	PE-15102	Potentio Meter (Balance) 50K ohm (S.W.)	1
23	PD-90187-02	AC Power SW	1
24	AE-64068	Lamp Ass'y (Piolt & Meter)	1
25	PE-90254	3 Gang Push SW (Function)	1
26	PE-90190	3 Gang Push SW (Loud/Mode/Tape)	1
27	PE-90253	2 Gang Push SW (Speaker)	1
28	PC-73061	Heat Sink (Power)	1
29	PE-73026	Power TR Holder	4
30	PE-73055	Reg TR Heat Sink	1
31	PE-73054	Bias TR Holder	2
32	PE-69094	Fuse Clip (20m/m)	6
33	PE-69041	Wire Clamp	1
34	PE-69095	Wire Guide	2
35	PE-69096	Fuse Holder (Primary)	1
36	PE-77038E	Wrapping Pin	25
37	PE-60004E	Solder Terminal	8
38	PE-71048	Ceramic Pipe	28
39	PF-95043	Din Connector	1
40	AE-95059-1/2	RCA Jack (6P)	1
41	AE-95058-1/2	RCA Jack (4P)	1
42	AD-70052	System Ground	1
43	PE-76006	Speaker Terminal	1
44	PE-67051	AC Power Cord	1
45	PE-71008A	AC Power Cord Stopper	1
46	PE-77070	Capacitor Tube	2
47	K40343	Audio P.C. Board	1
48	K40343-4	SW P.C. Board	1
49	K40343-3	Selector SW P.C. Board	1
50	K40343-2	Speaker Selector P.C. Board	1
51	K40343-1	Tone P.C. Board	1
52	36BSB-0.8-250	Fuse (T800mA) Primary	1
53	36BFB-2.5-250	Fuse (F2.5A) Speaker	1
54	36BSB-0.5-250	Fuse (T500mA) Lamp	1
55	36BFB-2.5-250	Fuse (F2.5A) Speaker	1
56	PE-67058	Slat Wire	1

Ref. No.	Parts No.	Description	Q'ty
57	PD-35121	Power Transformer	1
<b>FRONT PANEL ASS'Y PARTS LIST</b>			
58	PE-63074	Meter Window	1
59	PE-72172	Push SW (Power) Bezel	1
60	PE-63075	Meter Plate	1
61	PE-72175	Control Knob Felt	3
62	PE-72176	Volume Knob Felt	1
<b>TONE P.C. BOARD ASS'Y K40343-1</b>			
<b>SEMICONDUCTORS</b>			
Q201L/R		Transistor MPS9633C	2
Q202L/R		Transistor 2SA841BL or 2SA970BL	2
Q203L/R		Transistor MPS9633C	2
<b>CAPACITORS</b>			
C201L/R	50AS478-16E	Al-Solid 0.47μF	16WV E
C202	50AL100-16E	Elect 10μF	16WV E
C203L/R	50CE101-50K	Ceramic 100PF	50WV K
C204L/R	50CE101-50K	Ceramic 100PF	50WV K
C205L/R	50AL479-16E	Elect 4.7μF	16WV E
C206L/R	50PS821-50J	Poly 820PF	50WV J
C207L/R	50MY473-50J	Mylar 0.047μF	50WV J
C208L/R	50MY473-50J	Mylar 0.047μF	50WV J
C209L/R	50CE680-50K	Ceramic 68PF	50WV K
C210L/R	50AL479-16E	Elect 4.7μF	16WV E
C211	50AL101-16E	Elect 100μF	16WV E
C212L/R	50AS109-16E	Al-Solid 1μF	16WV E
<b>RESISTORS</b>			
R201L/R	60F102-1/4J	Carbon 1K	1/4W J
R202	60F132-1/4J	Carbon 1.3K	1/4W J
R203	60F473-1/4J	Carbon 47K	1/4W J
R204L/R	60F123-1/4J	Carbon 12K	1/4W J
R205L/R	60F474-1/4J	Carbon 470K	1/4W J
R206L/R	60F271-1/4J	Carbon 270	1/4W J
R207L/R	60F152-1/4J	Carbon 1.5K	1/4W J
R208L/R	60F124-1/4J	Carbon 120K	1/4W J
R209L/R	60F103-1/4J	Carbon 10K	1/4W J
R210L/R	60F223-1/4J	Carbon 22K	1/4W J
R211L/R	60F472-1/4J	Carbon 4.7K	1/4W J
R212L/R	60F103-1/4J	Carbon 10K	1/4W J
R213L/R	60F824-1/4J	Carbon 820K	1/4W J
R214L/R	60F124-1/4J	Carbon 120K	1/4W J
R215L/R	60F472-1/4J	Carbon 4.7K	1/4W J
R216L/R	60F102-1/4J	Carbon 1K	1/4W J
R217	60M101-1/2K	Metal Oxide 100	1/2W K
<b>SPEAKER SELECTOR P.C. BOARD ASS'Y K40343-2</b>			
<b>SEMICONDUCTORS</b>			
D403L/R		Diode IN60 (Pair)	2
D404L/R		Diode IN60 (Pair)	2
<b>RESISTORS</b>			
VR401L/R	PE-16000	Semifixed 4.7K (B)	2
<b>AUDIO PC BOARD ASS'Y K40343</b>			
<b>SEMICONDUCTORS</b>			
Q101L/R		Transistor MPS9633C	2
Q102L/R		Transistor 2SA841BL	2
Q103L/R		Transistor MPS9633C	2
Q301L/R		Transistor 2SA841BL	2
Q302L/R		Transistor 2SA841BL	2
Q303L/R		Transistor MPS A06	2
Q304L/R		Transistor FCSS9013HG	2
Q305L/R		Transistor MPS A06	2
Q306L/R		Transistor MPS A56	2
Q307L/R		Transistor 2SB595 0Y	2
Q308L/R		Transistor 2SD525 0Y	2
Q309		Transistor MPS A06	1
Q401L/R		Transistor FCSS9013HG	2
Q501		Transistor MDS9400	1
Q502		Transistor 2SC1815	1
D101		Zener Diode WZ182 (18.2V)	1

# PARTS LIST

Ref. No.	Parts No.	Description	Q'ty	Ref. No.	Parts No.	Description	Q'ty
D301		Zener Diode MZ314 (14V)	1	R309L/R	60F122-1/4J	Carbon 1.2K 1/4W J	2
D401L/R		Diode CDG24 or MA150	2	R310L/R	60F472-1/4J	Carbon 4.7K 1/4W J	2
D402L/R		Diode CDG24 or MA150	2	R311L/R	60F683-1/4J	Carbon 68K 1/4W J	2
D501		Diode CDG24 or MA150	1	R312L/R	60F132-1/4J	Carbon 1.3K 1/4W J	2
D502-D505		Diode IN5172 (2A 100V)	4	R313L/R	60F392-1/4J	Carbon 3.9K 1/4W J	2
D506		Zener Diode MZ314 (14V)	1	R314L/R	60F332-1/4J	Carbon 3.3K 1/4W J	2
<b>COILS</b>				R315L/R	60F152-1/4J	Carbon 1.5K 1/4W J	2
L301L/R	PE-30045	Coil 2.7μH	2	R316L/R	60M271-1/2K	Metal Oxide 270 1/2W K	2
<b>CAPACITORS</b>				R317L/R	60W278-2K	Ceramic 0.27 2W K	2
C101L/R	50CE221-50J	Ceramic 220PF 50WV J	2	R318L/R	60W278-2K	Ceramic 0.27 2W K	2
C102L/R	50AL100-16E	Elect 10μF 16WV E	2	R319L/R	60M339-1/2K	Metal Oxide 3.3 1/2W K	2
C103L/R	50CE101-50J	Ceramic 100PF 50WV J	2	R320L/R	60M100-1/2K	Metal Oxide 10 1/2W K	2
C104L/R	50AL470-16E	Elect 47μF 16WV E	2	R321	60F333-1/4J	Carbon 33K 1/4W J	1
C105L/R	50CE200-50J	Ceramic 20PF 50WV J	2	R322L/R	60M271-1K	Metal Oxide 270 1W K	2
C106L/R	50MY222-50J	Mylar 0.0022μF 50WV J	2	R501	60M330-1/2K	Metal Oxide 33 1/2W K	1
C107L/R	50MY822-50J	Mylar 0.0082μF 50WV J	2	R502	60F222-1/4J	Carbon 2.2K 1/4W J	1
C108L/R	50AL479-16E	Elect 4.7μF 16WV E	2	R503	60F682-1/4J	Carbon 6.8K 1/4W J	1
C109	50AL101-16E	Elect 100μF 16WV E	1	R504	60F333-1/4J	Carbon 33K 1/4W J	1
C110	50AL-221-25E	Elect 220μF 25WV E	1	R505	60F102-1/4J	Carbon 1K 1/4W J	1
C111	50AL221-35E	Elect 220μF 35WV E	1	R506	60F562-1/4J	Carbon 5.6K 1/4W J	1
C701L/R	50CE471-50J	Ceramic 470PF 50WV J	2	R507	60F471-1/4J	Carbon 470 1/4W J	1
C702L/R	50MY473-50J	Mylar 0.047μF 50WV J	2	R508	60F470-1/4J	Carbon 47 1/4W J	1
C301L/R	50AS109-16E	AL Solid 1μF 16WV E	2	VR301L/R	16008	Semifixed 470 (B)	2
C302L/R	50CE471-50J	Ceramic 470PF 50WV J	2	<b>CHASSIS</b>			
C303L/R	50CE101-50J	Ceramic 100PF 50WV J	2	<b>CAPACITORS</b>			
C304L/R	50CE101-50J	Ceramic 100PF 50WV J	2	C112	50CE473-50J	Ceramic 0.047μF 50WV J	1
C305	50AL101-16E	Elect 100μF 16WV E	1	C601-C602	ECK-DHS472MD	Ceramic 0.0047μF 400VAC	2
C306L/R	50AL220-16E	Elect 22μF 16WV E	2	<b>P.C. BOARD</b>			
C307L/R	50AL330-50J	Ceramic 33PF 50WV J	2		K40343	Audio Board	1
C308L/R	50CE473-50J	Ceramic 0.047μF 50WV J	2		K40343-1	Tone Board	1
C309L/R	50AL220-35E	Elect 22μF 35WV E	2		K40343-2	Speaker Selector Board	1
C310L/R	50CE101-50J	Ceramic 100PF 50WV J	2		K40343-3	SW Board	1
C311L/R	50MY104-50J	Mylar 0.1μF 50WV J	2		K40343-4	Function SW Board	1
C312L/R	50CE101-50J	Ceramic 100PF 50WV J	2				
C313L/R	50MY473-50J	Mylar 0.047μF 50WV J	2				
G314L/R	50AL109-50E	Elect 1μF 50WV E	2				
C401L/R	50AL109-50E	Elect 1μF 50WV E	2				
C402L/R	50AL109-50E	Elect 1μF 50WV E	2				
C403L/R	50AL100-16E	Elect 10μF 16WV E	2				
C404L/R	50AL109-50E	Elect 1μF 50WV E	2				
C501-C504	50CE103-500J	Ceramic 0.01μF 500WV J	4				
C505-C506	PE-50001-02	Elect 3300μF 35WV E	2				
C507	50AL100-25E	Elect 10μF 25WV E	1				
C508	50AL221-25E	Elect 220μF 25WV E	1				
C509	50AL101-16E	Elect 100μF 16WV E	1				
C510	50AL101-16E	Elect 100μF 16WV E	1				
<b>RESISTORS</b>							
R101L/R	60F154-1/4J	Carbon 150K 1/4W J	2				
R102L/R	60F681-1/4J	Carbon 680 1/4W J	2				
R103L/R	60F683-1/4J	Carbon 68K 1/4W J	2				
R104L/R	60F153-1/4J	Carbon 15K 1/4W J	2				
R105L/R	60F333-1/4J	Carbon 33K 1/4W J	2				
R106L/R	60F681-1/4J	Carbon 680 1/4W J	2				
R107L/R	60F124-1/4J	Carbon 120K 1/4W J	2				
R108L/R	60F562-1/4J	Carbon 5.6K 1/4W J	2				
R109L/R	60F394-1/4J	Carbon 390K 1/4W J	2				
R110L/R	60F681-1/4J	Carbon 680 1/4W J	2				
R111L/R	60F332-1/4J	Carbon 3.3K 1/4W J	2				
R112L/R	60F473-1/4J	Carbon 47K 1/4W J	2				
R113L/R	60F102-1/4J	Carbon 1K 1/4W J	2				
R114-R115	60M470-1/2K	Metal Oxide 47 1/2W K	2				
R116	60M271-1K	Metal Oxide 270 1W K	1				
R701L/R	60F334-1/4J	Carbon 330K 1/4W J	2				
R702L/R	60F223-1/4J	Carbon 22K 1/4W J	2				
R703L/R	60F822-1/4J	Carbon 8.2K 1/4W J	2				
R301	60F102-1/4J	Carbon 1K 1/4W J	1				
R302L/R	60F102-1/4J	Carbon 1K 1/4W J	2				
R303L/R	60F824-1/4J	Carbon 820K 1/4W J	2				
R304L/R	60F563-1/4J	Carbon 56K 1/4W J	2				
R305L/R	60F182-1/4J	Carbon 1.8K 1/4W J	2				
R306L/R	60F182-1/4J	Carbon 1.8K 1/4W J	2				
R307L/R	60F102-1/4J	Carbon 1K 1/4W J	2				
R308L/R	60F103-1/4J	Carbon 10K 1/4W J	2				

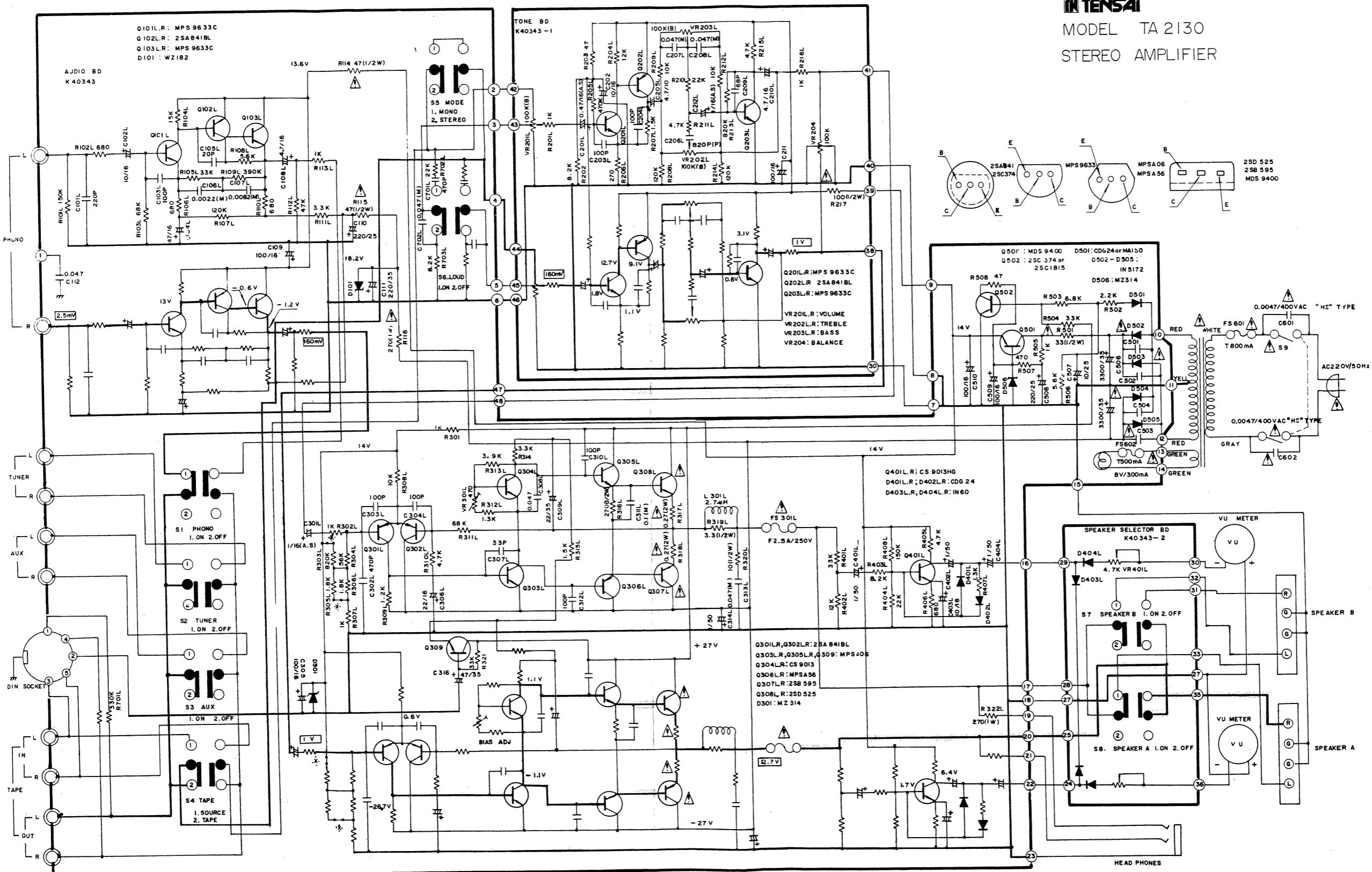
## **POINT TO POINT WIRING DIAGRAM**



# SCHEMATIC DIAGRAM

**TENSAI**

MODEL TA 2130  
STEREO AMPLIFIER



NOTE 1. Resistance values are indicated in ohms unless otherwise specified. (K = 1,000, M = 1,000,000)

2. Capacitance values are shown in microfarads unless otherwise noted (P = micro - microfarads)

3. Component values are subject to change without notice.

4. All voltages are referenced to ground under the following conditions:

DC: No signal except where indicated

AC: RMS

V -- AC at 1KHz, Bohm load, full signal

5. MARKS  $\Delta$ 'S ARE FOR DC ZERO OFFSET ADJUSTMENT.

5. The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part.

Therefore, when replacing, be sure to use parts of identical designation.